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Paper No. 25

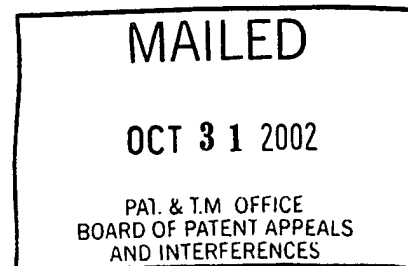
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KAJ HENRICSON
and
OLAVI PIKKA

Appeal No. 2001-0098
Application No. 08/875,424

ON BRIEF



Before WARREN, WALTZ, and LIEBERMAN, Administrative Patent Judges.

LIEBERMAN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner
refusing to allow claims 16 through 19, 21, 22, 24 through 30, and 32 through 46,
which are all the claims pending in this application.

THE INVENTION

The invention is directed to a method of treating cellulose pulp by substantially sequentially acid treating the pulp at a pH of 2-6 under specified conditions so as to decrease the Kappa number by 1-9 units, the acid treating step designated as Å. The pulp is thereafter treated in a second stage with a complexing or sequestering agent at a pH of 4-9, the treatment with a complexing agent designated as Q. After a washing step, the pulp is bleached with hydrogen peroxide, the peroxide treatment designated as P. Accordingly, the sequence of steps may be described as Å QP. Additional limitations are described in the following illustrative claims.

THE CLAIMS

Claims 16 and 36 are illustrative of appellants' invention and are reproduced below:

16. A method of pre-treating, prior to bleaching with peroxide, cellulose pulp, to improve bleachability of the pulp, using an acid tower, and a tower in a second treatment stage, comprising the steps of substantially sequentially:

(a) if necessary, adjusting the pH of the pulp to between 2-6 by adding aminic acid, sulfuric acid, hydrochloric acid or another acid which does not contain oxidizing perhydroxyl ions;

(b) feeding the pulp to the acid tower;

(c) treating the pulp in the acid tower at substantially the pH, between 2-6, to which it has been adjusted in step (a), at a pressure of 0-20 bar, at a temperature of 75-130°C, and for 20-240 minutes, so that acid treatment decreases the kappa number by 1-9 units;

(d) transferring the pulp from the acid tower to the tower of the second treatment stage,

(e) in the second treatment stage tower treating the pulp with a complexing agent at a pH of between 4-9;

(f) washing, pressing, or both washing and pressing the pulp; and

(g) bleaching the pulp with hydrogen peroxide using 5 to 20 kg peroxide/adt and 0-15 kg oxygen/adt.

36. A method of pre-treating, prior to bleaching with peroxide, cellulose pulp, to improve bleachability of the pulp, using an acid tower, and a tower in a second treatment stage, comprising the steps of substantially sequentially:

(a) if necessary, adjusting the pH of the pulp to between 2-6 by adding aminic acid, sulfuric acid, hydrochloric acid or another acid which does not contain oxidizing perhydroxyl ions;

(b) feeding the pulp to the acid tower;

(c) treating the pulp in the acid tower at substantially the pH, between 2-6, to which it has been adjusted in step (a), at a pressure of 0-20 bar, at a temperature of 75-130°C, and for 20-240 minutes, so that acid treatment decreases the kappa number by 1-9 units;

(d) transferring the pulp from the acid tower to the tower of the second treatment stage;

(e) in the second treatment stage tower treating the pulp with chlorine dioxide and adding chemicals to the pulp to adjust the metal profile of the pulp prior to, or in combination with, the chlorine dioxide treatment;

(f) washing, pressing, or both washing and pressing the pulp; and

(g) bleaching the pulp using hydrogen peroxide.

THE REFERENCES OF RECORD

As evidence of obviousness, the examiner relies upon the following references:

Walsh	5,431,781	Jul. 11, 1995
Devenyns et al.	WO 94/20674 A1	Sep. 15, 1994
(published World Intell. Prop. Org. Application) (hereinafter referred to as WO 94/20674).		
Holtinger et al.	EP 0 622 491 A2	Nov. 2, 1994
(published European Patent Application) (hereinafter referred to as EP '491).		
Yotsuya et al.	57-21591	Feb. 4, 1982
(published Japanese Kokai Patent Application)(hereinafter referred to as JP 57-21591).		

Marèchal, "Acid Extraction of the Alkaline Wood Pulps (Kraft or Soda/AQ) Before or During Bleaching Reason and Opportunity," Journal of Wood and Chemistry Technology, 13(2), pp. 261-81 (1993).

THE REJECTIONS

Claims 16 through 19, 21, 22, 24 through 30, and 32 through 34 and 36 through 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 94/20674 in view of EP '491 with or without Marèchal.¹

Claim 35 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 94/20674 in view of EP '491 with or without Marèchal and further in view of JP 57-21591 and Walsh.²

¹ All references to WO 94/20674 are to the English language translation prepared for the USPTO by The Ralph McElroy Translation Company.

² All reference to JP 57-21591 are to the English language translation of this document submitted by appellants.

OPINION

We have carefully considered all of the arguments advanced by the appellants and the examiner, and agree with the appellants that the rejections of the claims are not well founded. Accordingly, we reverse both rejections. We furthermore remand the case to the examiner for consideration of a proposed rejection.

The Rejection Under Section 103(a)

"[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability." See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

WO 94/20674 is directed to a method for the delignification of a chemical paper pulp. See page 2. We find that a specific sequence of steps is utilized by WO 94/20674 and is characterized by the successive steps OQPÅ wherein "O denotes an oxygen treatment step, Q denotes a step of decontamination of the pulp of its metal ions, P denotes an alkaline hydrogen peroxide treatment step, and Å denotes a peroxy acid treatment step." See page 3. We find that a discussion on pages 4 and 5 is directed to variants in step Q. We find that step Q can consist of a treatment with an acid which is free of a sequestering agent. See page 4. We find that when a sequestering agent is present, one can also add a small amount of acid in step Q. Id. We further find that both temperature and pressure conditions are disclosed for step Q. See page 5. However, there is no suggestion of using both an acid treating step in the absence of a sequestering agent and a separate sequestering treatment.

Furthermore, we find that WO 94/20674 discloses that, “in a variant, to use, prior to the sequence of treatment steps according to the invention, at least one washing, or a decontaminating, pretreatment step using an aqueous acidic solution and/or a solution of a sequestering agent for metal ions (step Q),” may be used. See page 8. Accordingly, WO 94/20674 provides for two separate steps of pretreating the chemical pulp. We further find that thereafter pH, pressure and time conditions are provided which are within the scope of the claimed subject matter. See page 9. Notwithstanding these findings, the variant proposed by WO 94/20674 for a pretreatment must occur prior to the sequence of steps. The first step of the sequence is step O, the oxygen treatment step. Accordingly, the variant suggested would have the nomenclature ÅQOQPA. This suggested sequence of steps is not the sequence of steps required by the claimed subject matter.

Furthermore, the secondary references relied upon by the examiner fail to provide the requisite motivation to combine the teachings of any of the secondary references with those of WO 94/20674. The examiner merely states that, “it would have been obvious” to change sequences or control the conditions in the absence of stating why the changes would have been obvious. Accordingly, the combination of references is merely a hindsight reconstruction of the elements of the claimed subject matter. Based upon the above finding and analysis, we conclude that the examiner has not established a prima facie case of obviousness with respect to the aforesaid set of claims. See In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) (“[T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous

application of the requirement for a showing of the teaching or motivation to combine prior art references").

Based upon the above analysis, we have determined that the examiner's legal conclusion of obviousness is not supported by the facts. "Where the legal conclusion [of obviousness] is not supported by [the] facts[,] it cannot stand." In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968), reh'g denied, 390 U.S. 1000 (1968).

Remand To The Examiner

On consideration of the record, we remand the application to the jurisdiction of the examiner for appropriate action in accordance with our findings infra. Upon return of this application to the examiner, the examiner should reconsider the patentability of the claimed subject matter under Section 103, with respect to at least claim 16 over EP '491 in view of Marèchal, and any possible combination of the aforesaid references with additional references.

EP'491 is directed to a method for bleaching cellulose pulp wherein prior to the bleaching the pulp is subjected to acid treatment at a pH of up to about 5 (steps a and c) and treated with a complexing agent (step e). See Abstract and page 2, lines 1-3 and 43-48. We find that the treatment with a complexing agent may be carried out in a separate stage after the acid treatment (step e). See page 3, lines 19-20. We find that the treatment with a complexing agent and magnesium and calcium compounds take place in a single step after the acid treatment (step e). We note in this respect that the specification

likewise provides for the addition of calcium and magnesium. See specification, page 5, lines 20-21. See page 3, lines 24-25 of EP '491. We find that after the pretreatment the pulp is suitably dewatered or washed and is then bleached with a peroxide containing compound at an alkaline pH (steps f and g). See page 3, lines 26-27, and page 4, lines 4-5. We find that the acid treatment is performed at a pH of up to about 5 and preferably from a pH of from 2 to 3 in the presence of hydrochloric or sulfuric acid (steps a and c). See page 4, lines 12-17. We find that the acid treatment and the treatment with a complexing agent are carried out at a temperature of from about 10°C to about 100°C and for a time of from about 1 minute to 600 minutes (steps c and e). See page 5, lines 27-30. We find that the peroxide used maybe hydrogen peroxide (step g) or a mixture of hydrogen peroxide and oxygen. See page 5, lines 35-39.

Example 1, page 6 discloses the treatment of pulp having a kappa number of 15.7 with sulfuric acid at a pH of 2.0 for 30 minutes. Although the temperature is only 50°C, we previously found a temperature range which overlaps that of the claimed subject matter. Thereafter, the pH is raised to 5.0 and EDTA, a complexing and sequestering agent is added. Thereafter, the pulp is bleached with hydrogen peroxide. We further find that after each stage the pulp is washed, which provides for step f. In our view, any additional washing steps are not precluded by the term in the claimed subject matter of "substantially sequentially." As for the amount of hydrogen peroxide used in the treatment of pulp, we cannot compare the proportions of EP' 491 with that of the claimed subject matter. In our view however, the amount of peroxide utilized is nothing more than

a result effective variable. It is well settled that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. See In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980); In re Antonie, 559 F.2d 618, 620, 195 USPQ 6, 8-9 (CCPA 1977); and In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Finally, we note that the kappa number as a result of the process is reduced from 15.7 to a number between 7.1 and 8.4, which provides the requisite decrease in kappa number required by the claimed subject matter. Although Example 1 does not specifically disclose at which step of the process the kappa number decreases, the reference to Marèchal clearly discloses that the decrease in kappa number is a result of treating pulp with sulfuric acid at a temperature of about 100°C for 1 to 3 hours hour at a pH of about 2.0 prior to bleaching. See pages 262-266 and 271. It is accordingly evident that the kappa number decreases by at least one unit as a result of the acid treatment step Å. Finally, little weight should be given to the term “tower” as provided in the claimed subject matter. It is of little consequence where the treatment occurs and no structure is provided in the claimed subject matter by stating the place where the reaction occurs. Furthermore, the use of towers in pulp treatment is considered ordinary and routine.

With respect to each rejection to be entered, the examiner shall state the ground of rejection and point out where each of the specific limitations recited in the rejected claims is found in the prior art relied upon in the rejection, shall identify any difference between

the rejected claims and the prior art relied upon, and shall explain how the claimed subject matter is rendered unpatentable over the prior art. If the rejection is based upon a combination of references, the examiner shall explain the rationale for making the combination.

DECISION

The rejection of claims 16 through 19, 21, 22, 24 through 30, 32 through 34, and 36 through 46 under 35 U.S.C. § 103(a) as being unpatentable over WO 94/20674 in view of EP '491 with or without Marèchal is reversed.

The rejection of claim 35 under 35 U.S.C. § 103(a) as being unpatentable over WO 94/20674 in view of EP '491 with or without Marèchal and further in view of JP 57-21591 and Walsh is reversed.

REVERSED and REMANDED

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NIXON & VANDERHYE
1100 NORTH GLEBE ROAD
8TH FLOOR
ARLINGTON, VA 22201